

Rworksheet#4a_camayodo

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#1.The table below shows the data about shoe size and height. Create a data frame.

#a. Describe the data.

```
df <- data.frame(
  Shoe_Size = c(6.5,9.0,8.5,8.5,10.5,7.0,9.5,9.0,13.0,7.5,10.5,8.5,12.0,10.5, 13.0, 11.5, 8.5, 5.0, 10.5),
  Height = c(66.0,68.0,64.5,65.0,70.0,64.0,70.0,71.0,72.0,64.0,74.5,67.0,71.0,71.0, 77.0, 72.0, 59.0, 62.0),
  Gender = c('F','F','F','F','M','F','F','F','M','F','M','F','M','M','M','M','F','F','M','F','F'),
)
df
```

##	Shoe_Size	Height	Gender
## 1	6.5	66.0	F
## 2	9.0	68.0	F
## 3	8.5	64.5	F
## 4	8.5	65.0	F
## 5	10.5	70.0	M
## 6	7.0	64.0	F
## 7	9.5	70.0	F
## 8	9.0	71.0	F
## 9	13.0	72.0	M
## 10	7.5	64.0	F
## 11	10.5	74.5	M
## 12	8.5	67.0	F
## 13	12.0	71.0	M
## 14	10.5	71.0	M
## 15	13.0	77.0	M
## 16	11.5	72.0	M
## 17	8.5	59.0	F
## 18	5.0	62.0	F
## 19	10.0	72.0	M
## 20	6.5	66.0	F
## 21	7.5	64.0	F
## 22	8.5	67.0	M
## 23	10.5	73.0	M
## 24	8.5	69.0	F
## 25	10.5	72.0	M
## 26	11.0	70.0	M
## 27	9.0	69.0	M
## 28	13.0	70.0	M

```
# b. Create a subset by males and females with their corresponding shoe size and height.
# What its result? Show the R scripts.
df_males <- subset(df, Gender == 'M')
df_females <- subset(df, Gender == 'F')
df_males
```

```
##      Shoe_Size Height Gender
## 5         10.5   70.0      M
## 9         13.0   72.0      M
## 11        10.5   74.5      M
## 13         12.0   71.0      M
## 14         10.5   71.0      M
## 15         13.0   77.0      M
## 16         11.5   72.0      M
## 19         10.0   72.0      M
## 22          8.5   67.0      M
## 23         10.5   73.0      M
## 25         10.5   72.0      M
## 26         11.0   70.0      M
## 27          9.0   69.0      M
## 28         13.0   70.0      M
```

```
df_females
```

```
##      Shoe_Size Height Gender
## 1          6.5   66.0      F
## 2          9.0   68.0      F
## 3          8.5   64.5      F
## 4          8.5   65.0      F
## 6          7.0   64.0      F
## 7          9.5   70.0      F
## 8          9.0   71.0      F
## 10         7.5   64.0      F
## 12         8.5   67.0      F
## 17         8.5   59.0      F
## 18         5.0   62.0      F
## 20         6.5   66.0      F
## 21         7.5   64.0      F
## 24         8.5   69.0      F
```

```
# c. Find the mean of shoe size and height of the respondents. Write the R scripts and its result.
mean_shoe_size <- mean(df$Shoe_Size)
mean_height <- mean(df$Height)
paste("The mean shoe size of the respondents is:", mean_shoe_size)
```

```
## [1] "The mean shoe size of the respondents is: 9.41071428571429"
```

```
paste("The mean height of the respondents is:", mean_height)
```

```
## [1] "The mean height of the respondents is: 68.5714285714286"
```

```
# d. Is there a relationship between shoe size and height? Why?
```

```
#2. Construct character vector months to a factor with factor() and assign the result to factor_months_vector. Print out
```

```
# Constructing the character vector months
months_vector <- c("March", "April", "January", "November", "January",
                  "September", "October", "September", "November", "August",
                  "January", "November", "November", "February", "May", "August",
                  "July", "December", "August", "August", "September", "November", "February",
                  "April")

# Converting the character vector months to a factor
factor_months_vector <- factor(months_vector)

# Printing out the result
factor_months_vector

## [1] March    April    January  November January  September October
## [8] September November August    January  November November  February
## [15] May      August   July     December August   August   September
## [22] November February April
## 11 Levels: April August December February January July March May ... September
```

#3. Then check the `summary()` of the `months_vector` and `factor_months_vector`. | Interpret the results of both vectors. A

```
summary(months_vector)
```

```
##      Length      Class      Mode
##         24 character character
```

```
summary(factor_months_vector)
```

```
##      April    August  December  February   January      July      March      May
##         2       4         1         2         3         1         1         1
## November    October September
##         5         1         3
```

#4. Create a vector and factor for the table below.

```
direction <- c("East", "West", "North")
frequency <- c(1,4,3)

factor_data <- factor(c(direction,frequency))
factor_data
```

```
## [1] East  West  North 1     4     3
## Levels: 1 3 4 East North West
```

```
new_order_data <- factor(factor_data, levels = c("East", "West", "North"))
print(new_order_data)
```

```
## [1] East  West  North <NA> <NA> <NA>
## Levels: East West North
```

#5. Enter the data below in Excel with file name = `import_march.csv`

```
reading <- read.csv(file.path(getwd(), "import_march.csv"), header = TRUE, sep = ",")
```

#6. Full Search

```
randomNum <- readline(prompt = "Enter number from 1 to 50: ")
```

```
## Enter number from 1 to 50:
```

```
#error cannot knit if there is as.numeric  
#randomNum <- as.numeric(randomNum)
```

```
paste("The number you have chosen is", randomNum)
```

```
## [1] "The number you have chosen is "
```

```
if (randomNum > 50) {  
  paste("The number selected is beyond the range of 1 to 50")  
} else if (randomNum == 20) {  
  paste("TRUE")  
} else {  
  paste(randomNum)  
}
```

```
## [1] ""
```

#7. Change

```
minimumBills <- function(price) {  
  
  min_bills <- price %/% 50  
  paste("The minimum no. of bills:", min_bills)  
}
```

```
minimumBills(900)
```

```
## [1] "The minimum no. of bills: 18"
```

#8. The following is each student's math score for one semester. Based on this, answer the following questions.

8.(a)

```
names <- c("Annie", "Thea", "Steve", "Hanna")  
grade1 <- c(85,65,75,95)  
grade2 <- c(65,75,55,75)  
grade3 <- c(85,90,80,100)  
grade4 <- c(100,90,85,90)  
  
grade <- data.frame(  
  Name = names,  
  Grade1 = grade1,  
  Grade2 = grade2,  
  Grade3 = grade3,  
  Grade4 = grade4
```

```
)  
grade
```

```
##      Name Grade1 Grade2 Grade3 Grade4  
## 1 Annie      85      65      85     100  
## 2 Thea       65      75      90      90  
## 3 Steve      75      55      80      85  
## 4 Hanna      95      75     100      90
```

8.(b)

```
grade$Average <- (grade$Grade1 + grade$Grade2 + grade$Grade3 + grade$Grade4) / 4
```

```
highScorers <- grade[grade$Average > 90,]  
highScorers
```

```
## [1] Name      Grade1 Grade2 Grade3 Grade4 Average  
## <0 rows> (or 0-length row.names)
```

```
if (nrow(highScorers) > 0) {  
  paste(highScorers$Name, "'s average grade this semester is", highScorers$Average)  
} else {  
  paste("No students have an average math score over 90.")  
}
```

```
## [1] "No students have an average math score over 90."
```

8.(c)

```
firstTest <- sum(grade$Grade1) / nrow(grade)  
firstTest
```

```
## [1] 80
```

```
secondTest <- sum(grade$Grade2) / nrow(grade)  
secondTest
```

```
## [1] 67.5
```

```
thirdTest <- sum(grade$Grade3) / nrow(grade)  
thirdTest
```

```
## [1] 88.75
```

```
fourthTest <- sum(grade$Grade4) / nrow(grade)  
fourthTest
```

```
## [1] 91.25
```

```
if (firstTest < 80) {  
  paste("The 1st test was difficult.")  
} else if(secondTest < 80) {  
  paste("The 2nd test was difficult.")  
} else if(thirdTest < 80) {  
  paste("The 3rd test was difficult.")  
} else if(fourthTest < 80) {  
  paste("The 4th test was difficult.")  
} else {  
  paste("No test had an average score less than 80.")  
}
```

```
## [1] "The 2nd test was difficult."
```

8.(d)

```
#ANNIE GRADE
```

```
if (grade$Grade1[1] > 90) {  
  print(paste(grade$Name[1], "'s highest grade this semester is", grade$Grade1[1], ".", sep = ""))  
} else if (grade$Grade2[1] > 90) {  
  print(paste(grade$Name[1], "'s highest grade this semester is", grade$Grade2[1], ".", sep = ""))  
} else if (grade$Grade3[1] > 90) {  
  print(paste(grade$Name[1], "'s highest grade this semester is", grade$Grade3[1], ".", sep = ""))  
} else if (grade$Grade4[1] > 90) {  
  print(paste(grade$Name[1], "'s highest grade this semester is", grade$Grade4[1], ".", sep = ""))  
}
```

```
## [1] "Annie's highest grade this semester is100."
```

```
#THEA GRADE
```

```
if (grade$Grade1[2] > 90) {  
  print(paste(grade$Name[2], "'s highest grade this semester is", grade$Grade1[2], ".", sep = ""))  
} else if (grade$Grade2[2] > 90) {  
  print(paste(grade$Name[2], "'s highest grade this semester is", grade$Grade2[2], ".", sep = ""))  
} else if (grade$Grade3[2] > 90) {  
  print(paste(grade$Name[2], "'s highest grade this semester is", grade$Grade3[2], ".", sep = ""))  
} else if (grade$Grade4[2] > 90) {  
  print(paste(grade$Name[2], "'s highest grade this semester is", grade$Grade4[2], ".", sep = ""))  
}
```

```
#STEVE GRADE
```

```
if (grade$Grade1[3] > 90) {  
  print(paste(grade$Name[3], "'s highest grade this semester is", grade$Grade1[3], ".", sep = ""))  
} else if (grade$Grade2[3] > 90) {  
  print(paste(grade$Name[3], "'s highest grade this semester is", grade$Grade2[3], ".", sep = ""))  
} else if (grade$Grade3[3] > 90) {  
  print(paste(grade$Name[3], "'s highest grade this semester is", grade$Grade3[3], ".", sep = ""))  
} else if (grade$Grade4[3] > 90) {  
  print(paste(grade$Name[3], "'s highest grade this semester is", grade$Grade4[3], ".", sep = ""))  
}
```

```
#HANNA GRADE
```

```
if (grade$Grade1[4] > 100) {  
  print(paste(grade$Name[4], "'s highest grade this semester is", grade$Grade1[4], ".", sep = ""))  
} else if (grade$Grade2[4] >= 100) {  
  print(paste(grade$Name[4], "'s highest grade this semester is", grade$Grade2[4], ".", sep = ""))  
} else if (grade$Grade3[4] >= 100) {  
  print(paste(grade$Name[4], "'s highest grade this semester is", grade$Grade3[4], ".", sep = ""))  
} else if (grade$Grade4[4] >= 100) {  
  print(paste(grade$Name[4], "'s highest grade this semester is ", grade$Grade4[4], ".", sep = ""))  
}
```

```
## [1] "Hanna's highest grade this semester is100."
```